

Junji NISHIDA, S.N. 10/589,682
Page 9

Dkt. 2271/76689

REMARKS

The application has been reviewed in light of the Office Action dated October 24, 2008. Claims 1-11 were pending. By this Amendment, claims 1 and 11 have been amended to clarify the claimed subject matter thereof, and new claim 12 has been added. Accordingly, claims 1-12 would be pending upon entry of this amendment, with claim 1 being the sole claim in independent form.

The drawings were objected to as having informalities.

The replacement sheet of drawings attached hereto as **Exhibit A** includes changes to, and replace, Figure 7 of the original sheets of drawings. Figure 7 is now labeled as prior art.

Withdrawal of the objection to the drawings is respectfully requested.

Claims 1-11 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over Hisatoshi (JP 10-225001) in view of U.S. Patent No. 5,825,155 to Ito et al.

Applicant respectfully submits that the present application is allowable over the cited art, for at least the reason that the cited art does not disclose or suggest the aspects of the present application of a determination circuit configured to *concurrently determine operation states of both a constant voltage circuit and a constant current circuit*, the determination circuit determining whether the secondary battery is operable and whether the secondary battery is reliably connected to the charging device *according to the operation states of the constant voltage circuit and the constant current circuit*.

Hisatoshi, as understood by Applicant, proposes a charging system including means to detect on the charger side whether a battery is connected by finding out the connecting condition of the battery based on the voltage appearing at a charging terminal and the current between the charging terminal and a power circuit during the cyclic on/off operation of a switch connected between the

Junji NISHIDA, S.N. 10/589,682
Page 10

Dkt. 2271/76689

charging terminal and the power circuit.

However, Hisatoshi, as acknowledged in the Office Action, does not disclose or suggest a determination circuit configured to concurrently determine operations states of both the constant voltage circuit and the constant current circuit.

It, as understood by Applicant, proposes an apparatus for controlling charge and/or discharge of a battery, as shown in Fig. 38 (reproduced below) thereof.

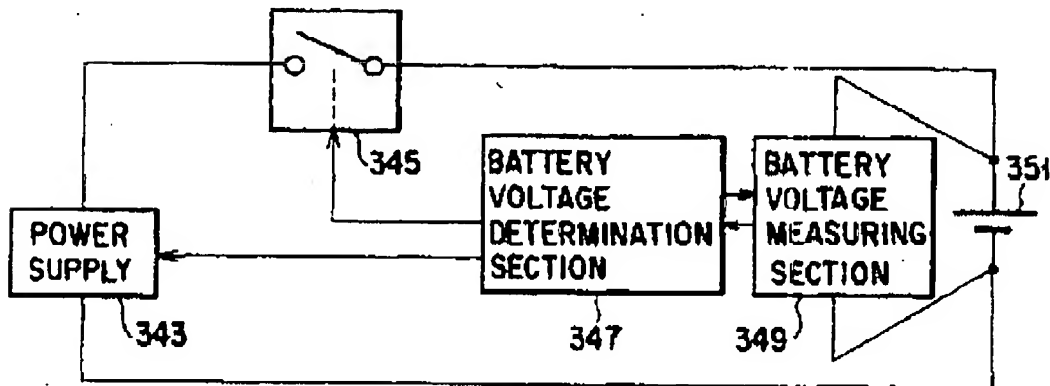


FIG. 38

The apparatus shown in Fig. 38 of Ito includes a power supply 343 for charging a secondary battery 351, a battery voltage measuring section 349 for measuring a battery voltage, a battery voltage determination section 347 for determining whether the battery voltage reaches a target value (a battery voltage target value 353 used for switching a continuous constant current charge operation to an intermittent constant current charge operation, and a battery voltage target value 357 in a charge OFF state), and a charge ON/OFF controller 345 for turning on/off the charge operation in accordance with the determination content of the battery voltage determination section 347. If the

Junji NISHIDA, S.N. 10/589,682
Page 11

Dkt. 2271/76689

battery voltage value is smaller than the target value 353, the continuous constant current charge operation is performed. If the battery voltage value is larger than the target value 353, the constant current charge operation is ON/OFF-controlled at a predetermined period. If the battery voltage value in the charge OFF state becomes larger than the target value 357, it is determined that a full charge state is set.

The battery voltage determination section (BVDS) 347 in figure 38 of Ito is equated in the Office Action to a determination circuit.

The battery voltage measuring section 349 measures the battery voltage, and sends this measurement to the BVDS 347. The BVDS 347 then uses this information to determine whether the battery voltage has reached a target value (that is, a battery voltage target value 353 for switching a continuous constant current charge operation to an intermittent constant current charge operation, and a battery voltage target value 357 in a charge OFF state). The charge ON/OFF controller 345 turns on/off the charge operation in accordance with the determination content of the BVDS 347.

The BVDS 347 of Ito merely uses the measured battery voltage of the circuit (a single quantity) and compares this value with a target value (another single quantity, 353 or 357), so that *ON/OFF control can be performed on the charging operation* (i.e. depending on the charge state of the battery, determining whether to perform one of continuous constant current charging, intermittent constant current charging, or constant voltage charging). In particular, if the BVDS 347 determines that the battery voltage is smaller than the target value, then the BVDS outputs a signal so that a continuous constant current charge operation is performed. On the other hand, if the BVDS 347 determines that the battery voltage is larger than the target value, then the BVDS outputs a signal so that the constant current charge operation is on/off controlled at a predetermined period. In the

Junji NISHIDA, S.N. 10/589,682
Page 12

Dkt. 2271/76689

specific case when charge is in the OFF state (i.e. an apparent full charge state), and it is determined that the voltage is still not yet at the target value, charge ON/OFF is continuously performed (to reach the desired full charge state), whereas if the voltage is at the target value, a constant voltage charge operation is performed (in order to prevent discharge).

However, the BVDS 347 does not *concurrently determine operation states of both a constant voltage circuit and a constant current circuit*, and to determine whether the secondary battery is operable and whether the secondary battery is reliably connected to the charging device *according to the operation states of the constant voltage circuit and the constant current circuit*.

Applicant respectfully submits that the cited art, even when considered along with common sense and common knowledge to one skilled in the art, does not render unpatentable the above-mentioned aspects of the present application of *a determination circuit configured to concurrently determine operation states of both the constant voltage circuit and the constant current circuit*, said determination circuit determining whether the secondary battery is operable and whether the secondary battery is reliably connected to the charging device *according to the operation states of the constant voltage circuit and the constant current circuit*.

Accordingly, applicant submits that independent claim 1 and the claims depending therefrom are allowable over the cited art.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit

Junji NISHIDA, S.N. 10/589,682
Page 13

Dkt. 2271/76689

Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



Paul Teng, Reg. No. 40,837
Attorney for Applicant
Cooper & Dunham LLP
Tel.: (212) 278-0400

EXHIBIT A

to
AMENDMENT
(Serial No. 10/589,682)

Replacement Sheet

S.N. 10/589,682

